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ABSTRACT

The delivery of technology-related assistance was selected as the topic for the Center for Special Education Technology's 1989 annual technology use meeting, in order to emphasize the broad context within which technology use occurs and to focus attention on the continuity of services needed to appropriately apply technology. The meeting sought to provide a forum for state-level review of issues in planning and providing technology-related assistance and strategies developed to respond to the need for information and services. This document provides synopses of two presentations, one on the goals, initiatives, and programs of the Office of Special Education Programs and the other on the state of current practice in educational technology use, given by Bea Birman and Linda Roberts, respectively. These are followed by summaries of presentations made by participants from 12 states, who described their experience-based service delivery strategies. The participants discussed five dimensions of service delivery: information services, training and technical assistance, assessment and evaluation, funding, and statewide planning. Each of these five dimensions has a section to itself, and each section opens with a list of issues that states must deal with. The final section lists relevant technology resources and five suggested readings. (JDD)

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PROCEEDINGS

State Forum: Delivery of Technology Related Assistance to Meet Student Needs

April 24 - 26, 1989

Conducted by
Center for Special Education Technology

A Project of
The Council for Exceptional Children

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State Forum
Introduction

The Center for Special Education Technology conducted its 1989 technology use meeting, a two-and-a-half day meeting entitled State Forum: Delivery of Technology-Related Assistance to Meet Student Needs, on April 24 - 26, 1989, at the Park Terrace Hotel in Washington, D.C.

The goal of the Center's annual technology use meeting is to advance the state of current practice in the use of technology in special education. Each year the meeting focuses on one aspect of technology use where interest within the special education community is high and sufficient progress has been made in the development of practices and services to warrant the exchange of information among key educators. This deliberate effort to collect and synthesize information is intended to assist in the development of new services and increase the effectiveness of existing services.

Delivery of technology-related assistance was chosen as the 1989 topic to emphasize the broader context within which technology use occurs and to shift attention from the products and devices used to the continuity of services needed to appropriately apply technology.

States play a critical role in advancing the effective use of technology. While state agency support has already been a significant factor in the growing use of technology, it is likely to be even more important in the future. State influence emanates from direct and indirect funding and support of programs and services including technical assistance, training, information and assessment services, as well as interagency arrangements for the delivery of services. Thus, the purpose of the meeting was to provide a forum for state level review of the issues addressed in planning and providing technology-related assistance and the strategies developed to respond to the need for information and services.

Attendance was by invitation. State directors of special education were asked to designate one person from their staff to represent their state at the meeting. Representatives from 39 states attended as well as representatives from 3 regional resource centers and the 6 model projects funded by the Office of Special Education Programs (OSEP).

Meeting Agenda

The meeting program addressed three major topics: the state of current practice in the use of technology with special needs students, five dimensions of delivering technology-related assistance at the state level, and the extension of state service capabilities through coordination of services under the new federal legislation.

The state of current practice was addressed in presentations by Drs. Bea Birman and Linda Roberts. These speakers provided overviews of technology use and concerns from national perspectives.

Dimensions of service delivery were explored through presentations made by state representatives. Participants from 12 states described their experience-based strategies developed to address service needs. Speakers focused on operational aspects of programs. The five dimensions of service delivery were:

- Information Services. Strategies for collecting, translating, and disseminating information about technology and referral to needed services.

- Training and Technical Assistance. Options for providing training and support services for educators using technology.
- Assessment and Evaluation. Strategies for assessing student needs relative to technology use in the educational setting.
- Funding. Cost of and funding for technology-based instructional programs and related equipment for program and individual use.
- Statewide Planning. Strategies to develop comprehensive plans, strengthen interagency support systems, maximize use of resources and expertise, and reduce replication of services.

The extension of state capabilities was addressed through presentations on the new P.L. 100-407 and activity related to the reauthorization of the Vocational Education Act and EHA. The presentations described the current status of this legislation as of April 1989. Small group discussions further explored the implications and opportunities for advancing special education goals with regard to technology-related assistance services.

Proceedings Document

This proceedings document summarizes two of the three main topics addressed during the State Forum. A synopsis of the presentations on current and pending legislation, although timely in April 1989, would become dated in this document and is therefore not included.

Chapter 1 provides a synopsis of the two presentations on the state of current practice. The next five chapters are devoted to the dimensions of service delivery, one for each dimension. Each chapter opens with a list of issues that states must deal with. These lists were compiled from issues participants submitted prior to the meeting. The chapter then carries a synopsis of state strategies for addressing these issues. The final chapter lists relevant technology resources and readings.

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State of Current Practice

State of
Current Practice

Bea Birman: **OSEP Goals, Initiatives, and Programs**

Bea Birman, Chief of the Research and Development Projects Branch of the Office of Special Education Programs (OSEP), articulated the OSEP technology goals and summarized some OSEP initiatives undertaken to reach these goals.

Birman said that OSEP's first goal is to make technology widely available so that people with disabilities, whatever their age, can obtain the technological help they need regardless of income level or geographic location. The second goal is the continued improvement of the quality of technology. The third OSEP goal is the effective use of technology, the optimal use of all its features.

Birman stressed that technology availability is a systems issue; in school systems and even preschools, educators have an opportunity to influence children at an early age to become life-long users of technology.

OSEP promotes technology use in special education by (a) supporting activities that promote access to educational settings, (b) supporting experiences that enhance learning, and (c) providing technology support for service providers.

To promote access, OSEP funds a number of programs and projects that create technologies for children with communication disorders and that develop technologies to solve mobility and manipulation problems. It is hoped that the resulting technologies will allow the individual student to be more optimally included in school activities.

To enhance the learning of children with handicaps, technology can expand learning experiences, with the technology itself becoming a motivator.

OSEP provides technology support for teachers and related service professionals through such activities as software development that monitors student performance or improves assessment tools.

Birman also described the two general classes of technology activities by OSEP. One set advances the state of the art. This group includes visionary projects that set the potential direction for special education in the next five to ten years. The second set of activities expands the state of the practice. These practice-based projects identify more effective uses of technology.

OSEP has funded six innovative cooperative model projects, examples of the federal interest in fostering state-of-the-practice activities. These six projects are statewide service delivery models, some forming interagency planning groups, some taking new approaches to training. One is conducting training on assistive devices through a satellite telecommunication broadcast. Another project is establishing an equipment loan bank.

OSEP tries to foster communication among practitioners and among the research community as well as across state-of-the-art and state-of-the-practice groups. A prime example is the OSEP-funded Center for Special Education Technology. The Center sponsors a number of meetings

and other activities to help link state-of- the-art and state-of-the-practice people. A parallel center promotes similar linking in the area of media and materials.

OSEP is firmly committed to playing a role in building networks to enhance communication. In the past, agencies espoused a one way dissemination model, merely disseminating information and assuming that change would occur. Now however, they realize that this strategy alone does not work. networks of people communicating with each other are needed. Only in this way can progress be made.

State of
Current Practice

Linda Roberts: **Current Practice in the Educational Use of Technology**

Linda Roberts, Senior Policy Analyst, in the Congressional Office of Technology Assessment, provided an overview of the use of technology to enhance education. Roberts was the project director for Power On: New Tools for Teaching and Learning.

The Office of Technology Assessment is an analytical support agency of the United States Congress. OTA works with and for the committees of Congress, providing them with an objective, thorough analysis of technological issues.

For example, during the research for the Power On report, OTA examined the notion that technology could replace the teacher. OTA found absolutely no evidence to support this notion. If anything, without a really good teacher, the technology falls far short of its potential.

According to Roberts, there are four messages in the Power On report. First, if educators are serious about using technology resources in education, then it is imperative to expand current capability. Computer, communications, and video technologies are rapidly advancing. Yet use of these technological tools in education pales in comparison to their use in medicine, science, and business. There is an attitude in education that if an investment is made in hardware, then it should last until it breaks. Computers in the schools are not breaking. They turn out to be very resilient machines. But, their capacity does not grow unless an investment is made to change how they are used over time.

Second, technology alone will have limited impact on the schools because technology is not self-implementing. Teachers must know how to use it in their subject areas and with their students, and they must have appropriate software as well. This will require a sustained investment because, as the teachers begin to learn how to use the technology and see its capacities, they will need additional support and more information.

Third, improved software is needed to meet the diverse educational needs of the schools. Software can be improved significantly because of improved hardware capacity and because we have a better understanding about how children learn in these highly interactive environments.

Fourth, a larger investment in research and development (R&D) is needed to realize the potential offered by technology. For the last decade, Congress has mandated a line item in the education budget for educational technology R&D in special education. In no other area—vocational education, reading, writing, mathematics, science—has this kind of far-sighted investment been made. And the special education student has benefited. However, funding for education research overall has gone down in the last two decades. The major patron for R&D in educational technology now is the Department of Defense where current priorities suggest a reduction of useful information for transfer to education.

The OTA report also disclosed that computers can be found in almost every elementary and secondary school but, on average, there is only one computer for every 30 students. Schools' use of computers is still very limited.

Nevertheless, there are examples where technology is making a significant contribution to the improvement of learning. The report summarizes the recent research on effectiveness of computer-based instruction. Because existing research is spotty, more research and evaluation is needed to understand impacts in science, language, and other areas.

OTA calculated the costs to expand power and access of technology in the schools, train teachers, and acquire appropriate software. A significant expansion would cost $4 billion annually over a 6- year period. This translates into about one third of the schools' annual non-fixed budget monies on technology alone.

State education agencies can be important catalysts and initiators of change regarding use of technology in the schools. About half of the states require or recommend technology training for preservice teachers. Fewer have requirements or recommendations at the in-service level. States also provide resources for training and technical assistance in the form of consultants and technology preview centers. States also provide funding for hardware and software.

OTA found that less than a third of new prospective teachers felt prepared to use the computer in their classroom. Roberts asserts that new teachers feel uncomfortable and unready to make use of the technology because they lack role models and have limited experience applying technology in their teacher training program.

Yet, the teacher is the most critical factor in effective use of technology in the classroom. Knowledge of content, student needs, and technology applications are critical. Teachers need (a) supportive environments for experimenting with technology in the classroom and adopting its use where feasible and (b) time to pursue those activities.

Although the quality of software is improving,some areas of instruction still lack software that is appropriate or responsive to student needs. Most software does not go beyond the more common applications of drill and practice. More problem-solving tools need to be developed for a variety of subject matter areas.

Roberts also expressed an OTA concern about computer use in the area of testing and assessment. School technology use seems to be driven by test scores. Schools equate results with an increase in test scores. Although the computer can provide necessary drill and practice to raise test scores, these applications hardly tap the power and versatility of technologies. Yet, innovative uses of technology are not encouraged. The OTA report suggests a new direction for research: to find better ways to assess student learning and student progress, including using technology itself as a tool for measurement.

Copies of the OTA report, Power On! New Tools for Teaching and Learning, are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325 (202) 783-3238. The GPO stock number is 052-003-01125-5; the price is $11.00.

Dimensions of **State Services:** Information Services

Summary of Issues
Information Services

State representatives have identified the following questions/issues that need to be addressed when planning technology-related information services to meet student needs.

1. What information is needed?
   - assessment information
   - assistive device (product) information
   - training materials information
2. Who is the audience of the information?
   - state education agency personnel
   - other state agency personnel
   - local education agency personnel
   - parents
   - other service providers
3. What format should the information take?
   - print (newsletter, publications)
   - electronic bulletin board
   - video, audio
4. How can the information be accessed?
   - who should access it
   - on line (hardware compatibility issues)
   - including artificial intelligence for matching
   - accessing nearby resources
   - accessible to rural districts
5. Who pays for the information access?
6. How can the information stay current?
7. How should the information availability be publicized?
8. What information networks already exist? How are they used?
   - national (including clearinghouses, SpecialNet)
   - state
   - local and community based
9. What are existing effective/productive dissemination models?
   - including rural dissemination models
   - national
   - state
   - local
   - those for general awareness
10. Is it ethical to remain non-biased in providing specific product information?
11. What are the copyright issues related to relaying information from national/online services?
12. Should criteria be applied to qualify any sources referred to?

Service Delivery Strategies
Information Services

Presenters: *Frank Strona, Database Manager, ABLEDATA*

Valita Marshall, Director, Missouri Technology Center for Special Education

The presentations in this service delivery area explored national and state models for information service delivery. Critical issues involve access to information, comprehensiveness and currency of data, and strategies for coping with varying needs for information by different audiences.

ABLEDATA - A National Model

Frank Strona described the national dissemination service provided by ABLEDATA. ABLEDATA is maintained and developed by the Adaptive Equipment Center at Newington Children's Hospital, Newington, Connecticut, and is funded by the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education.

Described as the largest single-source database on assistive devices, ABLEDATA is a national information service with approximately 17,000 products from 2,200 different companies. A typical product entry includes the product name, a manufacturer's name and address, cost, a short description, and the key words.

ABLEDATA can be accessed through the database vendor BRS Information Technologies, an online bibliographic retrieval service. BRS houses many different kinds of databases from sports and psychological data to rehabilitation and other data. Any computer with a modem may be used to access ABLEDATA through BRS. (Contact BRS for subscription information: 1-800-345-4277.)

A microcomputer version of ABLEDATA is also available called Hyper-AbleData. Through a cooperative effort with Trace Center, University of Wisconsin-Madison, Hyper-AbleData has been developed for MacIntosh computers using HyperCard hardware. Hyper-AbleData is easy to use and inexpensive. Requirements for Hyper-AbleData are a minimum of 2 MB of RAM and 20 MB of space on a hard disk or a CD ROM player. (Contact the Trace Center to obtain copies of Hyper-AbleData: 608-262-6966.) Versions for IBM systems should be available in 1990.

CONET, another source of assistive technology information, is a cooperative network being developed by the Trace Center. There are several databases connected on this network, including Hyper-Trace Base (the HyperCard version of the Trace Center's resource book on computer devices) and Hyper-AbleData. All database members of CONET agree to provide their databases in a form suitable for a desktop computer and to update the database for five years. (More information on CONET is available from Christine Thompson at the Trace Center: 608-262-6966.)

There are several issues related to maintaining a database and disseminating information in a timely manner. One issue is that of currency and the ease of updating the existing data in the database. When Newington Hospital received the ABLEDATA contract, the database had not been updated since early 1987 due to a lapse in funding. The Adaptive Equipment Center has started updating ABLEDATA, including both product updates and hundreds of name and address changes. Monthly updates are provided to the BRS online system, and 6-month updates will be

distributed to subscribers of Hyper-AbleData. Discontinued products are kept in the database for requestors looking for products by a brand name who need to know when products are no longer available.

The comprehensiveness of a service is also an issue for information providers. ABLEDATA has a very large inventory of items, including devices from simple personal care aids to computers and software. It is also starting to include some do-it-yourself and custom products.

ABLEDATA can be accessed through BRS, by personal computer, and through the many dissemination points for Hyper-AbleData. Users without direct access to ABLEDATA can also request searches by calling an Information Specialist at Newington Children's Hospital: 1-800-344-5405 or 203-667-5405.

Missouri

Valita Marshall, Director of the Missouri Technology Center for Special Education, explained how the state center is organized. Funds are provided from the state education agency (the Department of Elementary and Secondary Education, Division of Special Education) and the University of Missouri at Kansas City. The Center serves three audiences in Missouri: local education agencies (serving 545 school districts), the state education agency (which includes area consultants and state schools), and institutions of higher education (totaling 24).

At the state level, the Center conducts special education technology workshops consisting of one to two full days of hands-on training that is free to participants. The Center also conducts a statewide technology conference with lecture-format presentations.

At the district level, the Center conducts in-service training. These are usually 1 hour to up to a 1/2 day of more specialized training to meet the needs of the particular district. The Center also provides district-level consultations which are child specific.

The Center is engaged in other projects. Staff attend and participate in local, regional, and national special education technology conferences. They exhibit and present at these conferences to increase participants' general awareness level. The Center chooses one or two special projects each year, such as working on a computerized IEP system, developing an assistive device training model, or establishing an exchange registry for technology equipment.

A major activity for the Center is dissemination of information products. Dissemination efforts include a Missouri toll-free telephone line for information requests, a technology-page insert in a state newsletter, and a telecommunication research bulletin board. The Center maintains a database of high-quality educational software. Fact sheets and reprints on current technology topics are distributed to answer requests.

From the Center's experience, Marshall articulated several issues for information service providers, such as the importance of focusing on their audiences. The Center plans separate strategies to reach each of its three audiences and maintains efforts to keep in touch with all of them. For example, state consultants are sent postcards, letting them know when Center staff will be in their service areas for workshops or consultations. The Center deliberately plans training and consultations in all parts of the state so no district feels it is missing services due to geographic location.

The third audience, institutions of higher education, has been less receptive to the Center's services than the other two audience despite efforts such as dissemination of monthly items from SpecialNet (including items from the RFP board) and an IHE newsletter that encouraged faculty to use technology to increase their personal productivity.

Another isssue involves awareness of the different levels of information needs that exist. The Center provides general awareness through the technology page in the state newsletter which has a circulation of 12,000. The toll-free number allows clients to call as they have the need. In filling requests, the Center is mindful of providing measured responses that do not overwhelm the individual and allow for follow-up questions as the requestor is ready for the next step. Marshall stressed that technology is often just too complicated to simply send a packet of information and expect printed materials to take care of the problem. Much of the Center's energy goes into on-site consultation and regional training to provide a more indepth response.

Dimensions of **State Services:** Training/ Technical Assistance

Summary of Issues
Training/Technical Assistance

State representatives have identified the following questions/issues that need to be addressed when planning technology-related training/technical assistance services to meet student needs.

1. Who needs training/technical assistance?
   - teachers (pre - continuing education)
   - related service personnel
   - parents
2. How can training/technical assistance needs be determined?
3. What level of training/technical assistance is needed?
   - awareness training, intensive training
   - pre-service, in-service
   - follow up and support functions
4. What content should the training/technical assistance include?
   - educational techniques, effective use, new teaching skills
   - equipment use, positioning
   - recognizing and assessing student needs
5. How can training/technical assistance be delivered?
   - centralized, on site, rural access, statewide conference, regional training, individualized assistance, print materials, training tapes
   - publicizing availability of training/technical assistance
   - providing different levels of training continuously
   - insuring consistency in training
6. Who provides the training/technical assistance?
   - locating trainers with expertise
   - building level teams
7. How can barriers to training be overcome?
   - educators having limited release time to attend training
   - educators who do not have sufficient equipment
8. What have been successful models for providing training/technical assistance?
9. How can training events be funded?
10. How can technology training be encouraged at the graduate level? What responsibilities do universities/colleges have related to technology teacher training programs and technology?
11. Should competencies be mandated by the state government?

Service Delivery Strategies
Training/Technical Assistance

Presenters: *Joan Thormann, Director of Computer Projects, Massachusetts Department of Education*

Michael Eason, Program Specialist, Florida Department of Education

Penny Reed, Coordinator, Programs for Students with Severe Orthopedic Impairments, Oregon Department of Education

The presentations in this service delivery area summarized three state models of training and offered insight into several training issues, such as who to train and how to support those trained, how to provide training for participants in distant locations, and how to maintain the cost-effective delivery of training.

Massachusetts

Joan Thormann described three training programs Massachusetts provides to its teachers: seminars, a summer institute, and a state technology newsletter.

Massachusetts offers training for both regular and special educators on how to use computers with special needs students. Seminars consist of six sessions, each 2 1/2 hours occurring over a 12-week period. Approximately 20 experienced teachers who use computers with special needs students are invited to participate in each seminar. These teachers are encouraged to share the information with others in their district to potentially produce a ripple effect from the training. Specifically, seminar participants are asked to (a) conduct an in-service in their home district, (b) develop a technology lesson plan to be published in a handbook, and (c) write an article for the statewide newsletter.

Technology experts conduct the intensive 2-week summer institute held at a state college in the western region of the state. Five follow-up sessions are held during the year. Participants include 20 experienced, computer-using teachers and 20 who are novices with technology. Again participants are asked to share what they have learned with their district coworkers, conduct an in-service, and write a newsletter article.

The statewide newsletter, written by teachers for teachers, has a circulation of 2,000. Articles are practical—geared to what teachers can do the next day in their classrooms. Complimentary copies are sent to the author's superintendent and special education director.

Besides state-supported activities, Massachusetts is rich with computer technology training resources available through other institutions. In the Boston area, the Technical Education Research Center (TERC) is active in training and has a project dealing with telecommunications. Educational Development Center (EDC), also in the Boston area, conducts writing projects with students with learning disabilities as well as conducts research on technology integration at the middle school level. CAST, in Peabody, provides adaptive device information. An Apple Alliance center is located in Bedford. The Boston Computer Society (BSC) conducts training activities daily.

Thormann brought up several issues in the delivery of training. One is the issue of how the state can support and encourage the teacher to use the information learned during the training. The in-service teaching, lesson plan, and newsletter article required of each participant helps the teacher to internalize the training and use the information gained in tangible, concrete events.

Teachers are given a $250 stipend to attend the training. This by no means compensates the individual for the time invested in the training, but the gesture does indicate that the state is appreciative of the teacher's efforts.

Another issue is how to encourage local school districts to support their technology-using teachers. Before a teacher can participate in a seminar or summer institute, his or her supervisor must sign approval for participation and indicate that the district will support the teacher's efforts. The state reinforces the district's support by its public relations effort of sending complimentary copies of the teacher's newsletter article to the appropriate district supervisors. A funding issue that is a recurring problem for Massachusetts, according to Thormann, is the state's reluctance to see the need for state-supported training. Because the state, and particularly the Boston area, has so many resources, there is an assumption that teachers will get their own training, relieving the state of the need to provide additional technology training.

Florida

Michael Eason described how services are organized in Florida. There are 18 regional centers called FDLRS centers. They are funded through P.L. 94-142 funds and each has a technology contact person. In addition, there is a specialized center that acts as a clearinghouse for all technology information. From that center, technology training is provided to the 18 regions through in-service training and through one-on-one contacts. This clearinghouse also answers phone requests and develops materials on various topics. The state schools for the deaf and blind act as clearinghouses for technology uses with those special needs populations.

Florida conducts 2- to 3-day summer workshops for its technology contact personnel located in the regional FDLRS centers and specialized centers. These workshops focus on themes and aim for state-of-the-art content. Another training opportunity for FDLRS personnel occurs prior to the state CEC conference and is based on topics requested frequently. The Florida Instructional Computer Conference, a training event held in February, is open to all educators. Presentations include a host of technology topics.

One issue that Florida has been grappling with involves determining the most cost-effective delivery mode for training. Eason believes that some technology training can be delivered more cost effectively using videodisc technology. Technology content that is basic information, that won't change in the next five years, can be produced on videodisc. Content on rapidly changing topics can be covered through presentations by in-person trainers.

Distance learning is another concern for Florida, with its large geographic area and wide divergence of personnel. One solution Florida has found is to use its satellite network as a conduit for training. Satellite transmission has been particularly effective for training topics that change annually. By holding a teleconference on the topic at each of the FDLRS sites, all personnel are updated quickly.

Oregon

Penny Reed described the training programs available in Oregon. Summer institutes, conducted for the last 6 years, have proved highly effective. An outside evaluator found that over 90 percent of the participants say they have changed their way of delivering services as a result of training received at the institutes.

Last summer the institute was a 2-week session on assistive devices. The 40 participants represented all regions of the state. The institute audience was highly varied, including physical therapists, occupational therapists, speech and language pathologists, and even instructional assistants.

Reed believes that the summer institutes are successful, in part, because of two requirements. First, in order to apply to the institute, the person must have his or her supervisor's approval for release free time to implement some of the things learned. Second, each participant must complete a follow-up plan. These plans tend to include a goal involving an individual student, training another person in their building, or often continuing their own growth. These plans are reviewed to make sure they are realistic, given the availability of equipment and other resources in the participant's district.

Oregon also has the Oregon Technology Access Project, one of six federally funded innovative cooperative projects. Through this project, the state has been able to provide consultation for long-range planning in each of the state's regions. Based on these planning efforts, the state now is providing in-service training. Next year it is anticipated that training will focus on regional trainers who in turn will train others in the local districts.

Oregon, like Florida, is concerned with distances and geographic factors such as population clustered along the west coast and remote areas in the eastern part of the state. Reed says state office personnel make a point of reaching out to the remote areas, especially since many rural districts, particularly hard hit with funding constraints, have no travel money.

Another issue is selecting who to train. Reed has found that districts usually fall into one of three categories. Some districts have good technology plans, purchase equipment and software according to the plan, and provide some training. Then there are districts with no technology plan. Any extra money at the end of the year is hastily spent on equipment that is often not used. The third group includes districts with little interest in information about technology. It is on the second group that Reed feels the state should concentrate, to encourage these districts to plan and begin using technology more effectively.

One other issue is that of how best to support the technology- using teacher. Like Massachusetts, training participants must receive their supervisor's permission to ensure district support for the participant's efforts. The training also encourages use of what was learned by requiring a follow-up plan and reviewing that plan to ensure realistic goals and achievable results.

Dimensions of **State Services:** Assessment/ Evaluation

Summary of Issues
Assessment/Evaluation

State representatives have identified the following questions/issues that need to be addressed when planning technology-related assessment/evaluation services to meet student needs.

1. Who should be evaluated and at what age/developmental level should the evaluation process be initiated?
2. What are the components of a comprehensive assessment/evaluation and follow-up?
   - screen
   - in-depth
   - follow-up
   - on-going (follow along)
3. Who should evaluate?
   - interdisciplinary evaluation teams
   - qualifications of evaluators (competence, standards for third parties to accept judgments, clinical experience)
   - training needed for evaluators
   - involvement of local personnel and parents in the process
4. Where is evaluation done?
   - centralized/localized
   - service to rural clients
   - technology center vs. multidisciplinary teams
5. Who pays for assessment?
6. How can the appropriate equipment be secured for the evaluation process?
7. What are effective models used to provide comprehensive statewide assessment/evaluation services?
8. How can a trial use of a device be assured for a client prior to purchase?
9. How can back-up systems be developed?

Service Delivery Strategies
Assessment/Evaluation

Presenters: *Charles Wright, Senior Consultant, Colorado Department of Education*

Vicki Schneider, Special Education Technical Consultant, Nevada Department of Education

Roland Hahn II, Director, Central Pennsylvania Special Education Resource Center

The presentations in this service delivery area describe three state models of assessment and evaluation. Critical issues for assessment include delivery of assessment services to the entire state, the best location for the assessment, and trial use of recommended devices.

Colorado

Charles Wright described the assessment process in Colorado. Assessments are conducted by multidisciplinary teams, currently numbering 22 and serving most of the state. Team members include a variety of professionals including speech and language therapists, occupational and physical therapists, vision specialists, psychologists, and classroom teachers. Team members are not compensated for assessment work. Substitutes are only provided for classroom teachers on an as needed basis.

Each team is provided with a kit containing basic equipment for conducting evaluations. Local schools supply the computers. Data for the 1988-89 evaluations indicate that 352 students were assessed with over 700 hours of parent contacts.

Assessment teams are trained during summer institutes and also meet from two to four times a month. Content of the initial summer training is divided equally between the assessment process and team-building activities. The emphasis on team-building is considered necessary because many assessment team members work autonomously when providing direct services to children.

Continuation training for team members is offered at least once a year. As a team member receives additional training, he or she is encouraged to make brief presentations to groups to increase public awareness of assessment services. Audiences for these presentations could include service clubs and other organizations that might be willing to contribute funds for equipment.

Wright raised several issues regarding the delivery of assessment services. One is the issue of coverage. Colorado, being a large state with population clusters as well as large rural areas, initially piloted its assessment team concept in both rural and urban settings to ensure a workable system for the entire state. Also, Colorado has assembled assessment teams with professionals from both Utah and Nebraska. These teams cross state lines to conduct assessments in the border areas adjoining the states.

Another issue is that of networking services. Colorado incorporates two hospital-based programs with its center-based programs. The inclusion of the hospitals gives the assessment project additional depth and expertise. Hospital-based physicians and clinicians are enlisted to write letters and act on the state's behalf in terms of seeking out third-party funding, such as private insurance and Medicare.

Distribution of resources is another issue that Colorado has addressed. A central depository of assessment equipment located in metropolitan areas serves several administrative units at minimal expense. Remote areas do not have the same concentration of residual equipment and

thus the state has placed representative assistive devices in rural areas to be accessed as needed by the assessment teams.

A videotape entitled "I Have Something to Say" explains the Colorado Model and is available on request.

Nevada

Vicki Schneider summarized the assessment process in Nevada. Statewide assessment services have only been provided for one year and have focused on augmentative and alternative communication since that is the most critical area of need.

Because of the large number of rural areas in Nevada, assessment teams were not trained in each rural community. Instead the state trained a core of professionals and parents from around the state, including special educators, speech and language therapists, administrators, occupational therapists, physical therapists, and parents. Each team member agrees to participate in three assessments a year. The local school district pays travel and any substitute expenses incurred by members of the assessment team.

The core of assessment professionals are given four days of intensive training, with the understanding that training is augmented by field experience, i.e., participating in on-site assessments. The state realizes that this training is very limited and cannot, Schneider says, include the full scope and sequence of assessment. But given the state's options and the alternative of not conducting any assessments, Schneider stated that the state decided to go ahead with the limited training and provide as much support as possible along with some anticipated follow-up activities.

When a student is referred for an assessment, on-site screening is conducted to determine eligibility for the assessment process. The screening is done by a speech therapist, special education teacher, and a parent. If the child is deemed eligible, the appropriate individuals are selected to serve on that particular assessment team. The child is assessed in his or her natural environment, so the team also includes the child's own speech and language therapist and the child's parents or caregivers. Both high and low technology as well as no technology options are explored. There is a commitment made by the district to attempt to procure the recommended equipment and services.

One issue that Nevada faced was the issue of conducting assessments in natural environments. Prior to the state establishing assessment services, children were assessed out of state. These assessments were often ineffective for a variety of reasons, the most obvious being that the students did not perform in a typical manner because they were in unfamiliar surroundings with unfamiliar people. Drawbacks included an inability to adequately assess fatigue during a typical one-or two-day assessment, and a lack of first-hand knowledge of the environmental demands by those conducting the assessment. With the establishment of statewide teams, assessments can now be conducted in the child's natural environment.

Another issue, that of field-testing the device recommended for the child, is critical and an option out-of-state assessors were unable to provide to Nevada students. The state has incorporated a long-term field-testing step within the assessment process. Students are able to try a variety of different devices over a period of time in their own environments. Final recommendations are not made until the assessment team knows that a device is going to work for a particular student.

Limited funding was another issue addressed by Nevada: The Nevada model has one central staff person. Training costs are minimal because the state relies on existing expertise of assessment team members and travel costs and substitute reimbursements are borne by the individual school districts.

Pennsylvania

Roland Hahn II described the service delivery model in place in Pennsylvania. The Pennsylvania Assistive Device Center (ADC) has been in existence since 1984. Evaluations are conducted by local augmentative specialists who total 100 in the state with three in each of the 29 intermediate units. These local augmentative specialists work with local school district professionals when evaluating a student. Evaluations are conducted in the child's familiar environment and the child interacts with persons familiar to him or her.

The assessment follows a ten step process which includes identifying student's needs and gathering background information about the pupil. It also involves interviewing parents and staff, and observing the student; assessing motor and language skills; and finally matching device features to the student's functional needs. There is a built-in trial run with the device, plus evaluation of the device along with appropriate follow-along activities.

State staff see themselves as resource people to the local augmentative specialists. They model assessment methodology. For augmentative specialists and others involved in assessing students, the state provides extensive training programs such as a 2-week intensive training and lab course. There is also an annual retreat in conjunction with the International Society for Augmentative and Alternative Communication (ISAAC). Local augmentative specialists are supported with an evaluation kit containing approximately $2,000 worth of equipment and devices needed for most assessments. A toll-free number is another link that the state provides to its local specialists.

One issue that Pennsylvania addresses is that of comprehensive training for its specialists. ADC sees itself playing a key role in developing training materials for its local augmentative specialists. Currently it is developing a series of 2-day sessions offering a sequence skills-building type program with additional follow-up training activities for the specialists. ADC also offers a wide range and variety of awareness-level training through regional and statewide conferences and workshops.

Pennsylvania has found videotape to be an excellent medium for presenting training information to augmentative specialists. It has produced an extensive library of tapes on a range of topics. Group analysis of videotaped case studies is frequently included in the assistive device training programs.

Another issue faced by Pennsylvania is that of recycling assistive devices. A trial use of a specific device is an essential part of the assessment. ADC has established a short-term loan program to meet trial use needs for students and educators. Thus, many different devices can be rotated among the local districts without each district having to invest in an inventory of expensive items. The state has also established a long-term loan program which provides a method to exchange equipment as a student physically or developmentally outgrows the assistive device system. This sharing of equipment throughout the state has proven to be a cost-effective program.

Another issue addressed by the state is that of appropriate follow-along activities for students equipped with assistive devices. ADC sponsors an annual 3-day conference for students who use assistive devices and their parents and teachers. Presentations are made by the students, teachers, and parents, as well as expert users of devices, who can serve as role models. Many times a student may be the only one is his or her school to use a particular device and thus does not have the opportunity to be around other assistive device users. By bringing 100 or 150 of these persons together in one place, the conference allows device users to see that they are not alone in their use of assistive devices.

Dimensions of **State Services:** Funding

Summary of Issues
Funding

State representatives have identified the following questions/issues that need to be addressed when funding technology-related services to meet student needs.

1. What needs to be funded?
   - equipment purchase
   - training on equipment
   - personnel training
   - equipment maintenance, repair, replacement/upgrade
2. What are the various funding sources and how can information on these sources be developed, maintained, and disseminated?
3. What are effective strategies for seeking funding?
   - securing third party payments
   - interagency agreements
   - models of state agency/industry cooperation, private sources
4. How can people be trained about the funding procurement process?
5. How should available state funds be allocated (e.g., percentage for training, information dissemination, equipment purchase)?
6. What are barriers related to funding?
   - use of school purchased equipment in home, in employment setting
   - providing rural districts with adequate services and equipment
7. What is the "right of the individual" regarding access to technology?
8. What are the best uses of devices no longer needed by persons whose skills or physical size has changed?
   - equipment loan bank
   - sharing of equipment
9. How are states planning for P.L. 100-407?
10. How can the funding of the development of low demand high tech devices be encouraged?
11. How can hardware developers be encouraged to reduce obsolescence of older model devices?
12. How can the awareness of funding agencies be increased regarding the use of technology for disabled people?

Service Delivery Strategies
Funding

Presenters: *Mark Kneidinger, Associate in Special Education, New York State Education Department*

Sue Gaskin, Resource Systems Coordinator, Arkansas Department of Human Services

The presentations in this session described services in two, very different states: a large-population, urban state and a small-population, rural state. Issues for funding include informed purchase of technology goods and services, marketing technology uses in the community, and equity issues of which individuals have the right to assistive devices.

New York

Mark Kneidinger described how services in New York, a state with a large population and a large tax base, are organized. The state has a network of 50 special education training and resource centers (SETRC) that provide training to special education teachers including technology training. The state has three handicap-specific resource centers, with more to be developed in the next few years.

New York State also has regular education technology service centers throughout the state. The state emphasizes mainstreaming and these resource centers train regular and special educators in the use of technology for special education students. Under these regular education centers, there are 12 regional computer centers to aid school districts in planning for technology. There are also 99 teacher resource centers that deliver training to both special education teachers and regular education teachers. Approximately 35% of the training conducted by these resource centers focuses on technology.

Funds for technology programs come from federal sources through P.L. 94-142, 89-313, and 99-457, as well as through Chapters I and II. The state provides aid from the education department on a per student formula, and other funds are available to schools through special legislative grants where local districts can write proposals that their legislators fund directly. Local city and county governments provide additional funds. Private and corporate sources, such as Apple, IBM, and others are tapped too.

Issues that New York has addressed include the accessibility of information to make informed purchases. The state is in the process of developing a consumer-oriented interactive central information system. It currently has a system called TNT, Technology Network Ties, that will link all BOCES (Board of Cooperative Education Services) throughout the state. In a few years, TNT will also link all 755 school districts. TNT will be adding two databases with evaluation data (one on hardware and one on software) to assist teachers in selecting appropriate technology.

Arkansas

Sue Gaskin, based in her state's Department of Rehabilitation, provided the perspective of rehabilitation services in her summary of the funding environment in Arkansas.

Arkansas, much smaller than New York, has a rural population and a limited tax base. Technology services to individuals with disabilities are centralized in Little Rock, the state capital. Outreach services are provided by the Easter Seal Society for the school-aged population and adult services

are coordinated by the Division of Rehabilitation Services. Easter Seal assesses students and provides some training of school staff and parents. They also have a residential program with an assistive device loan program which provides equipment on a short-term basis.

Adult services are available through the Division of Rehabilitation. Arkansas was one of the original test sites for ABLEDATA and has relied on that information source for a number of years. The Hot Springs Rehabilitation Center provides an assessment/training site for individual students and their caregivers. Outreach assessments are provided by rehabilitation engineering staff upon request of the field counselors.

Many of the funding sources for technology devices come from grass roots operations. Parents, civic groups, and community fund raising are all supported by the communities. All states were mandated in 1986 to provide assistive technology assessments through the State Rehabilitation Agencies. In Arkansas, funds for assessments and procurement of devices are available from two program sources: vocational services and independent living services.

One issue Arkansas is facing is that of the individual's right to technology. One school district or one rehabilitation counselor may provide a particular assistive technology device for a student/client. Yet, a neighboring county, depending on its wealth or opinion, may not purchase the same piece of equipment for a similar student. Such a situation may contain ethical as well as service delivery implications.

Gaskin also feels the awareness issue needs to be addressed. Educators and rehabilitation professionals look at marketing the enhanced potential of individuals with severe disabilities who, though classified as "unemployable" or unable to live independently, may be able to live independently and become employed through the use of technology. Professionals in the field need to change/update the public perspective of what the word "disability" means so the consumers served may be fully integrated into their communities.

Dimensions of **State Services:** Statewide Planning

Summary of Issues
State Planning

State representatives have identified the following questions/issues that need to be addressed when planning technology-related services to meet student needs.

1. What does the future hold in terms of technology in the classroom? How can we plan for the future?
2. How effective are statewide planning task forces?
3. What have best practices and successful models shown concerning development of timelines, services flow charts, etc. to use in planning service delivery systems?
4. Who should be involved in planning?
   - critical players
5. What should a comprehensive state plan include?
   - services to all consumers from infants to elderly persons
   - rural services as well as urban services
   - transition from elementary to secondary school, from district to district
   - recycling equipment
   - local "acceptance of ownership" of technology services
   - evaluation of effectiveness of using technology
6. What are effective strategies to facilitate interagency cooperation?
   - is it realistic to coordinate services through multiple agencies
   - how can different agencies be kept abreast of each others needs, capabilities, resources
7. How can planning become an on-going strategy?
   - encourage long-term and short-term planning
   - incorporate evaluation and change into the plan

Service Delivery Strategies
State Planning

Presenters: *Joseph Todd, Assistant Director for Program Operation, Ohio Department of Education*

Mary Cole, Adaptive/Assistive Device Coordinator, Texas Education Agency

Lucian Parshall, Coordinator of Technology and Grants, Michigan Department of Education

The presentations in this session explored the efforts of three states as they plan for technology services. Critical issues addressed were ways to affect change, personnel to involve in planning, audience awareness questions, and the content of statewide plans.

Ohio

Joseph Todd described Ohio's methods for delivering services and its planning process. Sixteen regional resource centers throughout the state provide technical assistance in the form of inservice training, local planning assistance, and evaluation. The Ohio Resource Center for Low Incidence and Severely Handicapped (ORCLISH) offers statewide training and consultation assistance for educators working with severely handicapped students.

In 1985, the state decided to increase its efforts in the area of technology, specifically augmentative and alternative communication. Ohio local school districts pride themselves on their autonomy. Thus any planning had to be done very carefully and be very targeted, focusing resources upon critical points of change. Representatives from state agencies, private agencies, parent groups, and commercial interests were part of the planning group called the Augmentative Problem Solving Consortium. The group used the technique known as "likelihood impact analysis." They created event statements and then judged the events on their likely impact. From these exercises, a state plan emerged.

State plans called for the provision of assessment services by regional assessment teams in the special education regional resource center network. Training became a major component of the plan. A device loan collection was established and an incidence study was conducted to help define the number of students needing augmentative communication.

One issue addressed by the Ohio planning consortium was how to make the decision makers in the various state agencies and private companies more aware of the potential of technology to increase communication options for persons with disabilities. To help influence this crucial group, the planning committee prepared an 8-minute videotape and supporting brochure and used them to give short presentations to agency heads. This approach proved effective in winning support from agency heads of a statewide technology plan.

The planning committee also considered the importance of comprehensive training. Deciding that one shot training was ineffective, the planners recommended that three levels of training be conducted: beginning or awareness, intermediate, and advanced "trainer of trainers." Training in the three levels has been developed with a comprehensive series of courses in each level. This indepth training strategy has proved to be effective in Ohio.

Texas

Mary Cole described the services Texas provides and its planning efforts for technology use. Texas is fortunate in that the governor, the state board of education, and the state education agency see technology as a high priority for all the students in the state.

The Texas Education Agency established a network of 20 education service centers to serve local school districts. Within each of these centers there is a special education component with staff that provide training and technical assistance, collect data, maintain resource listings, and help local units develop procedures consistent with state directives. Specialists in these service centers provide assistance to the schools in the use of augmentative and assistive devices. These staff members form the basic links in the Texas Adaptive/ Assistive Devices (A/AD) Network.

State planning efforts also involve two technology advisory task forces. One is a technical group which includes technology producers and distributors as well as regular technology specialists within the state education agency. The second task force is a professional advisory group composed of representatives from many state agencies.

Issues addressed by Texas planners include the concept of integrating technology with other components of service. The state does not want to create an isolated community that separates students with handicaps. Instead technology use is seen within the bigger picture of providing adequate services to all children. For example, all school districts are required to have a technology plan, that includes both regular education and special education students. Technology is also integrated into the assessment process for students served by special education. Early childhood services are planned with technology components.

Texas is also trying to link technology use to its textbook requirements. The state buys textbooks for school districts through a rigorous proposal process. Because of the volume it purchases, the state has tremendous clout in the development of textbooks and this clout now extends to the software developed to accompany textbooks. Special education is working to have this same kind of clout extended to applications of technology for special education, so that students with disabilities can access textbooks in the regular curriculum.

Michigan

Lucian Parshall summarized how the state plan evolved in Michigan and what new planning activities will occur. Michigan has had a technology plan in operation since 1983. A planning team was created consisting of organizations interested in technology, universities involved in preservice training, vendors, and other individuals interested in technology from an instructional perspective.

A draft of the plan was developed and reviewed, then a public comment period was held to generate feedback. From these efforts the state plan was implemented and funded at a half million dollars annually. A new 3-to-5-year plan is in the process of being developed.

Both the original and new plans incorporate a student-centered philosophy. They also have identifiable outcomes, written in terms of services that teachers, administrators, parents, and students would receive through several state projects.

The new state plan has four components. The first is computer- assisted instruction, dealing with all types of activities for the classroom. The second area is computer-assisted management, which includes the state data collection and monitoring systems. The third area is assistive devices. The

state operates the Living and Learning Resource Center (LLRC) to provide support for students in need of adaptive devices. The fourth area, new for this plan, is emerging technologies.

Objectives for each of these areas include information and dissemination activities, such as the statewide newsletter and toll-free hotline; personnel preparation, such as computer labs at statewide conferences and training; technological support, such as on-site consultation; and funding for mini-grants to classroom teachers to purchase equipment.

Issues addressed by Michigan include developing special education technology training programs. After the original task force had completed the state plan, the members of the committee remained together as a coalition of organizations interested in promoting the use of technology. This group, called COMPUTE, developed five training modules and conducts technology training throughout the state. The modules, 4 to 8 hours in length, coincide with Michigan's identified computer competencies for technology literacy, use of instructional software and adaptive devices, and evaluation of software and hardware.

Resources

Technology Resources: **Information Services**

This technology resource list was prepared by the Center for Special Education Technology for its **State Forum: Delivery of Technology-Related Assistance to Meet Student Needs** meeting April 24 - 26, 1989. This information is intended to help technology users locate needed services. This listing is not all inclusive.

Center for Special Education Technology
Council for Exceptional Children
1920 Association Drive
Reston, VA 22091
800-873-8255

IBM National Support Center for Persons with Disabilities
P.O. Box 2150
Atlanta, GA 30055
800-IBM-2133
404-988-2733 (GA Voice Only)

National Library Service for the Blind and Physically Handicapped
The Library of Congress
Washington, DC 20542
202-707-5100

National Rehabilitation Information Center (NARIC)
8455 Colesville Road, Suite 935
Silver Spring, MD 20910
202-588-9284
800-34-NARIC

National Special Education Alliance
Office of Special Education and Rehabilitation
Apple Computer, Inc.
20525 Mariani Avenue, MS 43S
Cupertino, CA 95014
408-974-7910

National Technology Center
American Foundation for the Blind
15 West 16th Street
New York, NY 10011
212-620-2020

Office of Special Education and Rehabilitation
Apple Computer, Inc./MS 43S
20525 Mariani Avenue
Cupertino, CA 95014
408-974-7910
408-974-7911 (TDD)

SPECIALNET
2021 K Street, NW
Suite 315
Washington, DC 20006
202-296-1800

Technology Resources: **Associations/Organizations**

This technology resource list was prepared by the Center for Special Education Technology for its **State Forum: Delivery of Technology-Related Assistance to Meet Student Needs** meeting April 24 - 26, 1989. This information is intended to help technology users locate needed services. This listing is not all inclusive.

The American Speech-Language-Hearing Association (ASHA)
10801 Rockville Pike
Rockville, MD 20852
301-897-5700
1-800-638-8255

Association for Retarded Citizens (ARC)
P.O. Box 6109
Arlington, TX 76005
817-640-0204

Communication Aid Manufacturers Association
1022 Heyl Road
Wooster, OH 44691
216-262-1984

International Society for Augmentative and Alternative Communication (ISAAC)
P.O. Box 1762, Station R
Toronto, ON Canada M4G 4A3
416-737-9308

National Easter Seal Society
2023 West Ogden Avenue
Chicago, IL 60612
312-243-8400

RESNA
1101 Connecticut Avenue, NW
Suite 700
Washington, DC 20036
202-857-1199

United Cerebral Palsy Associations
66 East 34th Street
New York, NY 10016
212-481-6300

Technology Resources: **Product Availability Services**

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AbleData
Adaptive Equipment Center
Newington Children's Hospital
181 East Cedar Street
Newington, CT 06111
800-344-5405
203-667-5405 (In Connecticut)

Closing The Gap
P.O. Box 68
Henderson, MN 56044
612-248-3294

Cooperative Assistive Technology Information Network (CO-NET)
Trace Research and Development Center
Waisman Center
University of Wisconsin-Madison
1500 Highland Avenue
Madison, WI 53705-2280
608-262-6966

IBM/Special Needs Exchange
P.O. Box 18707
Washington, DC 20036
703-439-1492

Linc Resources, Inc.
4820 Indianola Avenue
Columbus, OH 43214
614-885-5599

Trace Research and Development Center
S-151 Waisman Center
1500 Highland Avenue
Madison, WI 53705-2280
608-262-6966

Technology Resources:
Augmentative Communication Resources

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Alabama Augmentative Communication Council
2127 East South Boulevard
Montgomery, AL 36199
205-288-0220

Alternative Communication Technology Center of Central Michigan
Central Michigan University
441 Moore Hall
Mt. Pleasant, MI 48859
517-774-7304

American Speech-Language-Hearing Association (ASHA)
10801 Rockville Pike
Rockville, MD 20852
800-638-8255

Augmentative Communication
Lenox Baker Children's Hospital
Duke University Medical Center
3000 Irwin Road
Durham, NC 27705
919-684-6669

Augmentative Communication Enterprise
551 East Columbus Avenue
Suite 102
Springfield, MA 01105
413-737-7368

Augmentative Communications Lab
St. Elizabeth Medical Center
Empress Hall
Classroom 1-B
Dayton, OH 45408

Communication Aids & Systems Clinic
S-120 Waisman Center
1500 Highland Avenue
Madison, WI 53705
608-263-2522

Communication Enhancement Clinic
The Children's Hospital
300 Longwood Avenue
Boston, MA 02115
617-735-8391

Communication Systems Evaluation Center
434 North Tampa Avenue
Orlando, FL 32802
407-423-9212

Courage Center
3915 Golden Valley Road
Golden Valley, MN 55422
612-588-0811

ENABLE
1603 Court Street
Syracuse, NY 13208
315-455-7591

Indiana Augmentative/Alternative Communication Consortium
Purdue University
Special Education, SCC-E
West Lafayette, IN 47907

International Society for Augmentative and Alternative Communication (ISAAC)
P.O. Box 1762, Station R
Toronto, ON Canada M4G 4A3
416-424-3806

The Virginia Augmentative Communication Interest Group
Medical College of Virginia
Speech Center
P.O. Box 545
Richmond, VA 23298
804-786-0240

Technology Resources: **Assistive Technology Centers**

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***Adaptive/Assistive Devices Program**
Special Education Programs
Texas Education Agency
William B. Travis Building
Room 5-120
1701 North Congress
Austin, TX 78701-2486
518-463-9414

Assistive Device Center
6000 J Street
Sacramento, CA 95819-2694
916-924-0280

Assistive Device Resource Center
Meeting Street School
Easter Seal Society of Rhode Island
667 Waterman Avenue
East Providence, RI 02914
401-438-9500

Assistive Technology Center
Easter Seal Society of New Jersey
730 Vassar Avenue
Lakewood, NJ 08701
201-255-6202

Assistive Technology Center
Santa Cruz County Easter Seal Society
621A Water Street
Santa Cruz, CA 95060
408-427-3360

***CONNSENSE**
University of Connecticut
Box U-64, Room 227
249 Glenbrook Road
Storrs, CT 06269-2064
203-486-5037

***Delaware Assistive Device Center**
University of Delaware
012 Willard Hall
Newark, DE 19716
302-451-2084

***FLDRS/TECH**
Instructional Technology Training
Resource Unit
1450 Martin Boulevard
Merritt Island, FL 32952
305-631-1911

***Living and Learning Resource Centre**
Physically Impaired Association of Michigan
601 West Maple Street
Lansing, MI 48906
517-487-0883
800-833-1996

***Special Education Technology Resource**
Emmanuel College Library
Third Floor
400 The Fenway
Boston, MA 02115
617-232-7913

***Technology Center for Special Education**
University of Missouri-Kansas City
Room 24, School of Education
5100 Rockhill Road
Kansas City, MO 64110
816-276-1040

Technology Resource Center
Maryland Rehabilitation Center
2301 Argonne Drive
Baltimore, MD 21218
301-554-3000

***Ohio Resource Center for Low Incidence and Severely Handicapped (ORCLISH)**
470 Glenmont Avenue
Columbus, OH 43214
614-262-6131

***Pennsylvania Assistive Device Center**
Central Pennsylvania Special Education Resource Center
150 South Progress Avenue
Harrisburg, PA 17109
717-657-5840

***Project ACCESS**
Michigan Department of Education
Wayne County Intermediate School District
33500 Van Born Road
Wayne, MI 48184
800-9-ACCESS

Trace Research and Development Center
314 Waisman Center
University of Wisconsin-Madison
1500 Highland Avenue
Madison, WI 53705
608-262-6966

* State run center

Technology Resources:
Rehabilitation Engineering Centers

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Development and Evaluation of Sensory Aids for Blind and Deaf Individuals
Smith-Kettlewell Institute of Visual Sciences
2232 Webster Street
San Francisco, CA 94115
415-561-1630

***Rehabilitation Engineering Center for Technology Resources**
Institute for Human Resource Development
78 Eastern Boulevard
Glastonbury, CT 06033
203-659-1166

Rehabilitation Engineering Center on Access to Computers and Electronic Equipment
Trace Center
University of Wisconsin-Madison
1500 University Avenue
Madison, WI 53706
608-262-3822

Rehabilitation Engineering Center on Augmentative Communication
University of Delaware
Department of Computer and Information Science
Newark, DE 19711
302-451-2712

Rehabilitation Engineering Center on Evaluation of Rehabilitation Technology
National Rehabilitation Hospital
Rehabilitation Engineering Services
102 Irving Street, NW
Washington, DC 20010
202-877-1932

Rehabilitation Engineering Center on Modifications to Worksites and Educational Settings
Cerebral Palsy Research Foundation of Kansas, Inc.
2021 North Old Manor
Box 8217
Wichita, KS 67208
316-688-1888

***Rehabilitation Engineering Center on Rehabilitation Technology Transfer**
Electronic Industries Foundation
Rehabilitation Engineering Center
1901 Pennsylvania Avenue, NW
#700
Washington, DC 20006
202-732-1115

* These centers have specific responsibilities for service delivery and information.

Technology Resources: **Commercial Sources**

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Adaptive Aids, Inc.
P.O. Box 57640
Tucson, AZ 85732
602-745-8112

Adaptive Communication Systems, Inc.
Box 12440
Pittsburgh, PA 15231
412-264-2288

Adaptive Peripherals, Inc.
4529 Bagley North
Seattle, WA 98103
206-633-2610

Adaptive Technology, Inc.
5334 72nd Circle North
Brooklyn Center, MN 55429
612-560-0861

Blissymbolics Communication International
24 Ferrand Drive
Don Mills, ON Canada M3C 3N2
416-421-8377

Canon USA, Inc.
One Canon Plaza
Lake Success, NY 11042
516-488-6700

ComputAbility Corporation
The Handicapped Source
101 Rt 46 East
Pine Brook, NJ 07058
201-882-0171

Crestwood Company
P.O. Box 04606
6207 North Teutonia Avenue, Unit G
Milwaukee, WI 53209
414-461-9876

Don Johnston Developmental Equipment
1000 North Rand Road, Building 15
Wauconda, IL 60084
312-526-2682

Dunamis, Inc.
2856 Buford Highway
Duluth, GA 30136
404-476-4934

ETI Corporation
1000 Long Boulevard, Suite 5
Lansing, MI 48911
517-694-9737

Garid, Inc.
10180 Viking Drive
Idyllwild, CA 92349
714-659-5905

Imaginart Communication Products
P.O. Box 1868
Idyllwild, CA 92349
714-659-5905

Innocomp
33195 Wagon Wheel Drive
Solon, OH 44139
216-248-6206

Luminaud, Inc.
8688 Tyler Boulevard
Mentor, OH 44060
216-255-9082

Mayer Johnson Company
P.O. Box AD
Solana Beach, CA 92075
619-481-2489

Phonic Ear, Inc.
250 Camino Alto
Mill Valley, CA 94941
415-383-4000
800-227-0735

Prentke Romich Company
1022 Heyl Road
Wooster, OH 44691
216-262-1984
800-642-8255

Sentient Systems Technology, Inc.
5001 Baum Boulevard
Pittsburgh, PA 15213
412-682-0144

Sonoma Communicators Engineering Developmental Center
P.O. Box 1493
Eldridge, CA 95431
707-938-6306

Street Electronics
1140 Mark Avenue
Carpenteria, CA 93013
805-684-4593

Talktronics, Inc.
27341 Eastridge Drive
El Toro, CA 92630

TASH, Inc.
70 Gibson Drive, Unit 12
Markham, ON Canada L3R 4C2
416-475-2212

Tiger Communication Systems, Inc.
155 East Broad Street
#325
Rochester, NY 14604
716-454-5134

Unicorn Engineering, Inc.
6201 Harwood Avenue
Oakland, CA 94618
415-428-1626

Votrax
21394 Rankin
Troy, MI 48083
800-521-1350
313-588-0341

VTEK
1625 Olympia Boulevard
Santa Monica, CA 90404
213-452-5966

Words+, Inc.
P.O. Box 1229
Lancaster, CA 93534
805-949-8331

Zygo Industries, Inc.
P.O. Box 1008
Portland, OR 97207
503-684-6006

Technology Readings:
Delivery of Technology-Related Assistance

This bibliography was developed by the Center for Special Education Technology for its **State Forum: Delivery of Technology-Related Assistance to Meet Student Needs** meeting April 24 - 26, 1989. The reading list is intended to help technology planners identify resources that may be useful in their state planning efforts. This current listing is not all inclusive.

Blackstone, S. W. (Ed.). (1986). *Augmentative Communication: An Introduction*. Rockville, MD: American Speech-Language-Hearing Association.

Blackstone, S. W., Cassatt-James, E. L., & Bruskin, D. M. (Eds.). (1988). *Augmentative Communication: Implementation Strategies*. Rockville, MD: American Speech-Language-Hearing Association.

Coston, C. A. (Ed.). (1988). *Planning and Implementing Augmentative Communication Service Delivery*. Washington, DC: RESNA.

RESNA (1988). *Rehabilitation Technology Service Delivery: A Practical Guide*. Washington, DC: RESNA.

Vanderheiden, G. C. (1987). *Issues in Planning a State-wide Technology Service Delivery Program for Special Education*. Madison, WI: Trace Center, University of Wisconsin-Madison.